TELEPHONE SYSTEM WITH COMPUTER GENERATED DIAL PAD AND AUTOMATIC DIALING

BACKGROUND OF THE INVENTION

The subject invention relates to a new and improved input/output device for performing the functions of a telephone. More particularly, a telephone device is disclosed having computer generated soft keys and an automatic dialing function.

Most telephones in use today perform the dialing function either via a rotary dial or the so called Touch Tone keys. A rotary dial functions to generate a stream of interrupts or pulses, the number of which correspond to the number dialed. In contrast, the depressing of keys on a Touch Tone phone causes audio signals of various pitches to be generated. As can be appreciated, both of the above described telephones require mechanical contact switches. It is an object of the subject invention to provide a new and improved telephone which eliminates the use of any mechanical switches.

In the prior art, a variety of interactive input/output devices have been developed. For example, in U.S. Pat. No. 4,190,833, issued Feb. 26, 1980 to Bejting, et al., an alphanumeric text generator is disclosed which includes a video display and interactive light pen. In the latter system, the light pen is used to select alphanumeric characters from the display array on the video screen. The characters are then processed and redisplayed on another portion of the screen. The latter system is intended to permit communication between an individual and a computer. Frequently, such interactive communications are carried over telephone lines. Thus, it would be desirable to provide an input/output device particularly adapted for use with computer communications which includes the functions of a telephone.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the subject invention to provide a new and improved input/output device which performs the functions of a telephone without utilizing mechanical switches.

It is another object of the subject invention to provide a new and improved input/output device which may be conveniently adapted for use in electronic communications.

It is a further object of the subject invention to provide a new and improved input/output device which functions as a telephone and includes an automatic dialing feature.

It is still another object of the subject invention to provide a new and improved input/output device having the functions of a telephone and which includes a non-mechanical volume control.

In accordance with these and many other objects, the subject invention provides a computer input/output device for performing the functions of a telephone. More particularly, the subject device includes a display means, such as a cathode ray tube. The display means is connected to a central processor for controlling the information supplied to the display. The central processor is provided with a means for generating a visual output. A portion of the visual output includes the representation of telephone keys. The fixed visual information is stored in a read only memory (ROM) in the central processor. The central processor is also provided with a means for generating tones and/or dial pulses, respectively corresponding to the keys of a telephone. Preferably, the tone or dial pulse generater is a digital device.

The subject invention further includes a detector means such as light pen, operatively connected to the central processor, and capable of receiving optical input from the display means and supplying an electrical output to the central processor. The light pen is movable over the video display such that when the light pen is placed over the image of a particular telephone key, the central processor generates an output tone or dial pulses corresponding to that key. By this arrangement, the dialing function can be achieved without the use of mechanical switches.

In the preferred embodiment of the subject invention, the visual output further includes an automatic dial directory which can be programmed with emergency or frequently called numbers. By this arrangement, when the light pen is used to select a telephone number from the directory, the central processor will generate tones corresponding to the digits of the telephone number which was chosen. The visual output will also include an alphanumeric array to enable the directory to be programmed. In use, the light pen is aligned with characters in the array, with the selected characters being supplied to and displayed in the directory.

The preferred embodiment of the subject invention further includes a non-mechanical volume control. More particularly, the video output will include a volume control block, defined by an elongated area on the display means. One end of the elongated area corresponds to low volume levels, while locations spaced increasingly distant from the low volume end, correspond to progressively higher volumes. The light pen is used to select a location within the elongated area. By this arrangement, the volume of the telephone signals received are amplified and adjusted in correspondence with the volume level associated with the selected location.

Further objects and advantages of the subject invention will become apparent from the following detailed description taken in conjunction with the drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a partial block diagram illustrating the new and improved input/output device of the subject invention.

FIG. **2** is an illustration of a video display corresponding to the main telephone mode of the new and improved input/output device of the subject invention.

FIG. **3** is an illustration of the video display depicting a second display mode, used for programming the dial directory of the input/output device of the subject invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. **1**, there is illustrated a partial block diagram of the input/output device **10** of the subject invention. The input/output device **10** is intended to function as a telephone and is particularly suited for use in conjunction with electronic data communication. Accordingly, a connection (not shown) between the subject device **10** and a telephone line must be provided.

Device **10** includes a display means **20** consisting, for example, of a cathode ray tube monitor, which is